

In re Patent Application of:

CALDWELL

Serial No. **09/828,293**

Filed: **APRIL 6, 2001**

REMARKS

The specification has been amended, original claims 1-9 have been replaced by new claims 10-15, and proposed corrections to the drawings, shown in red, have been submitted for the Examiner's approval. Reconsideration of this application in light of the forgoing amendments and following remarks is respectfully requested.

The finality of the Requirement for Restriction is noted. In light of the finality of the requirement, claims 1-4 have been cancelled without prejudice to Applicant's right to file a separate divisional application directed to the subject matter embodied therein.

Elected method claims 5-9 have been replaced by new claims 10-15 in an effort to more concisely define Applicant's invention in language which, as will be demonstrated below, is believed to be neither taught nor suggested by the prior art cited in the outstanding Office Action.

In response to the objection to the drawings, proposed corrections noted in red have been submitted for the Examiner's consideration. It is believed that these corrections are self-evident. Approval of the corrections is earnestly solicited. Upon an indication that the application is otherwise in condition for allowance, Applicants will file replacement drawings, which contain the approved corrections.

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The informality noted on page 13 line 24 of the specification has been corrected.

Turning now to the rejections of the claims, each ground of rejection, as proposed in items 6 and 7, on pages 4-7 of the outstanding Office Action, is respectfully traversed, and Applicant urges reconsideration and withdrawal of the rejections, particularly as applied to replacement claims 10-15.

In an effort to more concisely define Applicant's invention, each of independent replacement claims 10 and 15 demarcates the invention from a methodology standpoint, that is not only not disclosed by the prior art, but goes directly against it.

In particular, as described in the present specification, and as believed to be clearly delineated in replacement Claims 10-15, Applicant's invention is directed to a resin transfer molding process which, rather than forming a seal between its two mold halves, (the outer female mold and the inner female mold) is configured as an unsealed architecture, having a narrow, precise geometry offset between the molds and a continuous channel at the peripheral edge thereof. The inner mold is inserted into and compressed against the resin-impregnated preform that has been provided along the interior surface of the outer female mold. The mold cavity formed between the outer female mold and the inner male mold is an

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unsealed mold cavity and the insertion and compression of the inner male mold element is performed exclusive of the application of a vacuum, that would draw otherwise the inner male mold element toward the female mold element.

While a vacuum may be used as an auxiliary device to facilitate the outflow of resin and removal of air pockets from the mold cavity, the mold cavity itself is defined by the insertion of the inner male mold element into the outer female mold element with a prescribed geometry therebetween. This prescribed geometry is facilitated by the use of indexing elements, which delineate the spacing between the male and female mold halves. In addition, the male mold element is retained in its intended mold cavity-forming position by means of clamps.

The above-discussed features of the invention are believed to be clearly delineated in replacement Claims 10-15.

In particular, step (e) of independent Claim 10 specifies that the inner male mold element is inserted within the interior region of the outer female mold element, so as to cause compression of the male mold element against the resin-impregnated preform. This is accomplished exclusive of the application of a vacuum that would (otherwise) draw the inner male mold element toward the female mold element (something that is not preformed in the invention). At the same time, the insertion is such as to space the inner male mold element apart from the female mold element by a prescribed spatial

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offset. This offset defines geometry parameters of the unsealed mold cavity. As discussed above, this is readily accomplished by the indexing elements. A similar methodology is set forth in step (f) of claim 15.

In contrast therewith, the process described in the patent to Wejrock et al. 5,256,366 seals the male mold element against the female mold element and draws the male mold element against the female mold element by the use of a vacuum. This is briefly described in column 1, lines 45-48, and is more particularly explained in column 3, lines 6-19 and column 5, lines 15-22 of the '366 patent.

As such, the dimensions of the part being formed by the process of the '366 patent are not geometrically precise or stably defined when the male element is inserted into the female element. The ultimate shape of the device depends upon the extent of the vacuum and the drawing of the male mold element by the vacuum into sealing engagement against the female mold element.

Because the parts that form the mold cavity of the present invention are sized and shaped to predefine the geometry parameters of the mold cavity, the resulting resin-molded part can be accurately reproduced.

The secondary reference to Krauter 4,759,893 uses a pressure bag or balloon that is inflated against a resin pool at the bottom of a preform lined cavity. Applicant does not

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dispute the fact that Krauter shows the use of a fibrous material, per se. However, the patent itself has nothing to do with the invention, and there is no disclosure or suggestion of the methodology characterized in Applicant's replacement claims. Moreover, there is no suggestion in Krauter that would lead one to modify the process of Wejrock et al. to result in a methodology upon which Applicant's claims would read. Krauter inflates a bag, whereas Wejrock et al. draw a vacuum to pull the male mold toward the female mold. Applicant's process does neither.

The additional reference to Herbert, Jr. 5,087,193 has been cited because it describes the filing away of thin flashing. Again, trimming of flashing per se does not remedy the shortcomings of the references to Wejrock et al. or Krauter, discussed above. Moreover, like Krauter, Herbert, Jr. employs a flexible male mold 26, rather than one which stably forms with the rigid female mold a unsealed mold cavity therebetween.

In the absence of a citation of prior art which teaches or suggests Applicant's invention as defined in replacement claims 10-15, it is respectfully submitted that the present application is in condition for allowance.

Favorable reconsideration of this application and a Notice of Allowability of claims 10-15, are, accordingly, earnestly solicited.

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Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 01-0484 and please credit any excess fees to such deposit account.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings to Show Changes Made."

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Please replace the paragraph under the header BRIEF DESCRIPTION OF DRAWINGS, beginning at page 12, line 13, with the following rewritten paragraph:

In order to accurately dimensionally locate the male mold element 40 within the interior volume of the female mold element 10, a set of indexing elements or tabs, one of which is shown at 50 in Figure 5, may be affixed at spaced apart locations around the top surface 48 of the lip portion 43 of the male mold element 40, and are shaped so as to engage the top edge surface 13 of the female mold element 10. A respective indexing element 50 is sized so as to locate the top surface 48 of the lip portion 43 of the male mold element 40 at a prescribed vertical offset [53]52 from the top surface 13 of the female mold element. This prescribed vertical offset is preestablished to place the male mold element 40 into the female mold element 10 at the requisite depth that precisely defines the geometry parameters of the mold cavity 42. Once inserted, the male mold element 40 may be retained in its intended mold cavity-forming position by means of clamps and the like at the various indexing elements 50.

Please replace the paragraph beginning at page 13, line 24, with the following rewritten paragraph:

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In contrast thereto, in a conventional mold, shown in the partial side view of Figure 11, it is not uncommon for fibers of the structural preform 20 to extend onto the top edge surface 13 of the female mold element 10. When the inner male mold [45]40 is clamped down onto the female mold 10, these fibers become compressed or squeezed into a tightly bunched matting 110 between a lip 112 of the inner male mold 40 and the top edge surface 13 of the female mold element 10. As a consequence, the molded part can have excess flange material 110 extending between the lip 112 of the inner male mold 40 and the top edge surface 13 of the female mold element 10, causing the molded part to become effectively 'locked' to the outer, female mold 10. This impairs removal of the molded part, when the inner male mold element 40 is removed.

In the Claims:

Claims 1-9, delete without prejudice.

New Claims 10-15 have been added.

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: ASSISTANT COMMISSIONER OF PATENTS, U.S. PATENT AND TRADEMARK OFFICE, WASHINGTON, D.C. 20231, on this 12 day of February, 2003.

[Signature]